AF#2872

Docket No.: 1185.1018

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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4-1-03

In re the Application of:

Kayoko MASAKI et al.

Serial No. 08/772,259 Group Art Unit: 2872

Confirmation No. 5740

Filed: December 23, 1996 Examiner: T. Nguyen

For: SURFACE LIGHT SOURCE DEVICE OF SIDE LIGHT TYPE (As Amended)

APPELLANT'S BRIEF UNDER 37 C.F.R. §§ 1.191 AND 1.192

Pursuant to the Appellant's earlier filed Notice of Appeal on January 29, 2003, Appellant hereby appeals to the Board of Patent Appeals and Interferences from the final rejection mailed August 1, 2002.

Appellant submits this Appeal Brief in triplicate as required by 37 C.F.R. §1.192(a) along with the filing fee of $320.00 set forth in 37 C.F.R. §1.117(c).

I. REAL PARTY IN INTEREST

Pursuant to 37 C.F.R. §1.192(c)(1), due to the assignment executed on April 2, 1997, by the inventors and recorded in the United States Patent and Trademark Office at Reel 8559, Frame 0104, the real party in interest is as follows:

ENPLAS CORPORATION
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Kawaguchi-shi, Saitama, 332,
Japan

II. RELATED APPEALS AND INTERFERENCES

Pursuant to 37 C.F.R. §1.192(c)(2), although the real party in interest has other appeals and interferences, none of the other pending appeals and interferences is believed to directly affect or be directly affected by, or have any bearing upon the decision of the Board of Patent Appeals and Interferences in this appeal.

III. STATUS OF CLAIMS

Pursuant to 37 C.F.R. §1.192(c)(3), claims 4-7 and 9-11 are pending in this application at the filing of this Appeal Brief. Claims 4-7 and 9-11 stand finally rejected. Claims 4, 7 and 10 are independent claims, and claims 5, 6, 9 and 11 are dependent claims.

As initially filed, claims 1-6 were initially pending. In the Amendment filed February 17, 1998, claims 1, 2, 4 and 5 were amended. With the Continued Prosecution Application (CPA) filed November 6, 1998, a Preliminary Amendment amended claims 1, 2 and 4 and added new claim 7. In the Amendment filed June 3, 1999, claims 1, 4 and 7 were amended, and were further amended in the Amendment filed February 9, 2000, which was eventually entered with the CPA filed April 7, 2000, along with a Preliminary Amendment that amended claims 3 and 6 and added new claims 8 and 9.

Claims 1, 4 and 7 were further amended, and new claim 10 was added, with the Amendment filed November 27, 2000.

Other than adding new claim 11, with the Preliminary Amendment filed October 3, 2001, along with a CPA, and canceling claims 1-3 and 8, in the Amendment filed May 17, 2002, no additional amendments to the claims have been made since the November 27, 2000, Amendment.

IV. STATUS OF AMENDMENTS

Pursuant to 37 C.F.R. §1.192(c)(4), and 37 C.F.R. §1.192(c)(9), a copy of the pending claims involved in the appeal is included in their present condition, and reflecting the aforementioned amendments to the claims, in the Appendix.

V. SUMMARY OF INVENTION

Pursuant to 37 C.F.R. §1.192(c)(5), the present invention is directed toward a surface light source device, of a side light type, having an improved prism sheet.

As illustrated in FIG. 11, previous side light type light source devices included the reflecting sheet 4, scattering light plate 2, light source 7, reflector 8, prism sheet 5, and diffusible sheet 6.

As illustrated in FIG. 12, Illumination light L, from light source 7, is repeatedly reflected between the sloped side of reflecting sheet 4 and an exiting surface of scattering light plate 2. "During [a] propagation of the illumination light L [from light source 7], the component of an angle less than a critical angle with the exiting surface as the incidence angle with respect to the exiting surface is lowered upon every reflection [along the slope of reflecting sheet 6]....However, since its component of an angle less than the critical angle is emitted as the illumination light L1 is propagated with reflection on the slopes inclined with the exiting surface in the propagating direction...Therefore the surface light source device 1 of the side light type, which generates illumination light L1 with directivity, is called 'directive-emitting surface light source device of side light type.'" See the present application on page 3.

Prism sheet 5 is needed to correct for this directivity of emission. Prism sheet 5 includes a number of sloped projections directed toward the exiting surface of scattering light plate 2. "The prism sheet 5 allows the main component of the illumination light L1 from the scattering light guide plate 2 to come inside from the light source side's slopes...M1 of the triangular projections, whereupon the prism sheet 5 reflects the main component by the [exiting] slopes M2 opposite to the light-source-side slopes M1 and then emits it after reflecting by the slopes M2. As a result, the main emitting direction of the illumination light L1 is corrected to the frontal direction (normal direction) of the exiting surface. Through this action, the surface light source device 1 of side light type can emit the illumination light frontwards more efficiently as compared with the surface light source device of side light type using a light guide plate having a uniform thickness." See the present application on page 4, lines 7-23.

In addition, light diffusible sheet 6 was used to diffuse the emitting light of the prism sheet 5 to secure a desired angle of field of vision when forming a liquid crystal display. As discussed on page 5, lines 13-32, and illustrated in FIG. 14, since weakly illuminated regions DR are interspaced between more strongly illuminated regions AR, and since the reflecting sheet 4 will inevitably be seen through a frontal viewing, the color of the reflecting sheet 4 (disposed under scattering light guide plate 2) can be seen in the weakly illuminated regions DR.

Thus, the present invention is directly associated with correcting for this viewing of reflecting sheet 4 problem, caused by the occurrences of the weakly illuminated regions DR.

Accordingly, the inventors have discovered that if the slopes of prism sheet were modified to include light diffusible surfaces then the reflecting sheet would be prevented from

being seen from the exiting surface side of the light guide plate of the surface light type. See the present application in FIGS. 1, 3 and 6-10.

Essentially, since the illumination light diffused by the slopes exits the light control element after being substantially uniformly diffused within the light control element, it is possible to retard the reflecting sheet from being seen from the exiting-surface side of the light control element. See the present application on page 7, lines 20-24.

VI. ISSUES

Whether claims 4-7 and 9-11 are patentably distinguishable under 35 USC §103 over the prior art side type light source device, in view of Ishikawa et al., U.S. Patent No. 5,600,455.

VII. GROUPING OF CLAIMS

Pursuant to 37 C.F.R. §1.192(c)(7), claims 4-7 and 9-11 stand or fall together.

VIII. ARGUMENT

Pursuant to 37 C.F.R. §1.192(c)(7), Appellant's arguments follow herein:

As an example, relevant portions of independent claim 4 set forth:

"A surface light source device of side light type, comprising:...

a light control element disposed along the exiting surface of said light guide plate, the light control element extending in a plane, having a light entrance side with a prismatic surface adjacent to said light guide plate, and having a light emitting side, spaced from the light entrance side, said prismatic surface having repeated projections with slopes inclined with respect to the plane of said light control element, *at least part of said slopes defining a light diffusible surface to generate diffused light while the light emanating from the light guide plate is radiating within the light control element from the light entrance side towards the light emitting side, such that a surface of the light emitting side is illuminated in a substantially uniform manner, reducing light effects of the reflecting sheet.*" (Emphasis added).

All independent claims include at least similar diffusing features, with differing scope and breadth.

Essentially, since the first Office Action mailed August 15, 1997, claims of the present application have been rejected under an obviousness rationale based on a primary reference in combination with Ishikawa et al. The rejections were primarily based on the argument that because Ishikawa et al. illustrates a transparent member having roughened triangular shaped members, used in a liquid display panel, then it would have been obvious to modify the primary reference to include the same to disclose the presently claimed invention.

As pointed out in the Supplemental Amendment, filed May 17, 2002, in the Interview with the Examiner on April 9, 2002, the Examiner recognized that the necessity of the roughened projection member of Ishikawa et al., to solve a particular moiré problem relevant to the surface light source device in Ishikawa et al., may not be applicable to the prior art (Prior Art) discussed in the present application. Regardless, the Examiner expressed the belief that since Ishikawa et al. disclosed roughening triangular projections, similarly to the triangular projection of the presently claimed invention, one skilled in the art would attempt to try the same solution with Prior Art if and when a problem were detected.

After pointing out that such rationale was improper in the same Supplemental Amendment, the outstanding Office Action was issued, restating the Examiner's previous rejections based on a proffered combination of Prior Art and Ishikawa et al.

The outstanding Office Action indicates that it would have been obvious to modify Prior Art, in view of the teaching of Ishikawa et al., to set forth the presently claimed invention. Specifically, the Examiner recites that because Ishikawa et al. teaches to partially coarsen prism shaped elements on a transparent member to, it would have been obvious to partially coarsen the prism shaped elements in Prior Art.

For motivation, the Office Action details that the motivation for modifying Prior Art to include such coarsened prism elements is to provide a more uniform light distribution.

Specifically, the Office Action recites: "[i]n particular, the important thing disclosed/suggested to one skilled in the art made by Ishikawa et al. is that they teach that one of the two slopes constituting each of the prism/projection is roughed/roughed for the purpose of providing a more uniform in light distribution after light passing through such a prism." Page 5, bottom of the page.

The Examiner also argued: "[i]t is also noted that the formation of only one part of the slopes of each prism as suggested by Ishikawa et al is for the purpose of providing a uniform pattern of light in comparison with the use of prismatic configuration of the prior art. See columns 1-2 and figures 1-5 in which Ishikawa et al. disclose that since the slope(s) of each prism of the prismatic configuration is/are not sloped; therefore, the optical device of the prior art does not provide a uniform pattern when the view of an observer is angled with respect to the optical device. The formation of coarse surface on at least one part of the slope of each prism as suggested by Ishikawa et al. will overcome the disadvantages of the prior art while providing a uniform pattern of illumination. See Ishikawa et al., column 3."

Ishikawa et al. sets forth a surface light source display having, in order, a surface light source 3, a diffusing layer 7, a prism sheet 1, and an LCD panel 4. Ishikawa et al. sets forth that since the diffusing layer 7 causes light to be diffused into a uniform brightness distribution and directed "broadly" in many different directions, it is necessary to use prism sheet 1 to redirect light exiting diffusing layer 7 into a more perpendicular "narrow" direction, i.e., perpendicular from the surface of the light source 3.

Thus, in Ishikawa et al., the prism sheet 1 is utilized to narrow light exiting diffusion layer 7, which diffuses light exiting light source 3. Conversely to what the Examiner has indicated the prism sheet in Ishikawa et al. is utilized for. Rather, Ishikawa et al. discloses an improved diffusing layer 7, which performs the proffered improved "uniform pattern of illumination." Therefore, the Examiner's argument is flawed, in at least that the prism sheet of Ishikawa et al. does not perform the proffered "uniform pattern of illumination" operation that the Examiner relies upon as motivation to modify Prior Art.

Several additional points regarding Ishikawa et al. should now be noted. First, Ishikawa et al. sets forth a completely different type of side type light display device, with two light sources and no angled light plate.

Second, the light illumination system of Ishikawa et al. is different from Prior Art in that in Ishikawa et al. illumination light that exits the light plate is first diffused, and that diffusion is then compensated for by using a prism sheet to **narrow** the diffused light, while in Prior Art illumination light that exits the light plate is incident on a prism sheet that is used for a **complet ly differ nt op ration**, i.e., to redirect light incident from the light plate into a more direct "normal" direction from the exiting face of the light plate.

In Ishikawa et al., the use of the prism sheet to narrow the diffused illumination light is necessary to recapture potentially wasted light. However, the narrowing of the diffused light, which already has a uniform brightness distribution, can result in additional problems: "[w]hen disposing this transparent member between the surface light source device and the liquid crystal display panel as shown in FIG. 1, such trouble sometimes happens that a direction 1a along which the top lines of the triangle portions are extended or directions along which top portions of the conical or polygonal pyramid-shaped portions are aligned is or are lies upon bus lines of the liquid crystal display panel 4, and a strip pattern as Moiré, which is not desired." Ishikawa et al., col. 1, line 63, through col. 2, line 4.

Thus, in Ishikawa et al., moiré problems occur when the arrangement of the top of the prism elements corresponds to bus lines of an above liquid crystal display panel.

In addition, Ishikawa et al., in col. 2, lines 5-15, also details that since the prism elements narrow the illuminated light in an almost perpendicular direction, when an observer looks from an off angle the display looks dark, while the observer looks from directly above, the display looks bright.

The inventors in Ishikawa et al. discovered that these problems could be overcome is the surfaces of the prism elements were to be, at least, coarsened. By coarsening the prism elements, the moiré effects are not generated, and an observer won't see a dark display when looking at the liquid crystal display from an off angle.

Conversely, in a completely different arrangement of a different type of side-type light source, a corresponding prism arrangement has been determined to cause different problems than those of Ishikawa et al.

Specifically, the present application details that in a side-type light source when illuminated light beams exit a light plate along angles, after reflecting of the angled bottom surface of the light plate, i.e., the "scattering light plate," the angled incident beams are redirected by inner surfaces of prism elements in the prism sheet. See FIG. 12 of the present application. However, as illustrated in FIG. 14 of the present application, depending on the angle of incidence of the illumination, the prism sheet produces illuminated light with dark DR regions interspaced between bright AR regions. To solve this problem, the present inventors have discovered that by coarsening the surfaces of the prism elements the AR regions can be widened to essentially remove the potential DR regions.

Although the coarsening of the prism elements in the present invention, and the coarsening of the prism elements in Ishikawa et al., may in operation perform some diffusing operation, the need of coarsening of such prism elements the two systems is totally unrelated.

Effectively, the Office Action is arguing that since Ishikawa et al. coarsens prism elements therein, for a purported generation of a "uniform pattern of illumination," it therefore would have been obvious to coarsen the prism elements in Prior Art to also generate such a "uniform pattern of illumination."

However, as pointed out above, the motivation cited by the Examiner to coarsen the prism elements of Prior Art is both, irrelevant, since the prism sheet in Ishikawa et al. does not perform as proffered in the Office Action, and totally unrelated to the side-type surface light source of Prior Art. The problems solved in Ishikawa et al. are not present in Prior Art. In addition to Ishikawa et al. having the prism elements oriented on a opposing side of the prism sheet compared to that in Prior Art, the arrangement of elements in Ishikawa et al. is totally different from that in Prior Art. In Ishikawa et al., the light incident on the prism sheet is already uniform and diffused, essentially since there are two light sources and the illumination of light is not based on any angle of incidence of light exiting the light plate. Conversely, in Prior Art, the prism sheet receives illuminated light that hasn't already been diffused, and redirects angle incident light in a more perpendicular direction.

As commonly understood, the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art..."[the Examiner] can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would **lead** that individual to combine the relevant teachings of the references." In re Fritch, 23 USPQ 2d 1780, 1783 (Fed. Cir. 1992). In addition, the mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. Id. at 1783-84.

> "Rejection of patent application for obviousness under 35 U.S.C. §103 must be based on evidence comprehended by language of that section, and search for and analysis of prior art includes evidence relevant to finding of whether there is teaching, motivation, or suggestion to select and combine references relied on as evidence of obviousness; factual inquiry whether to combine references must be thorough and searching, based on objective evidence of record." In re Lee 61 USPQ2d 1430 (CA FC 2002)(vacating a

> decision by The Board of Patent Appeals and Interferences ("Board") of the USPTO, which upheld an examiner's rejection where the motivation for a specific combination was not supported by the record; the vacated holding of Board was based on the premise that "[t]he conclusion of obviousness may be made from common knowledge and common sense of a person of ordinary skill in the art without any specific hint or suggestion in a particular reference.")

Thus, accordingly, a prima facie obviousness rejection requires evidenced motivation from some reference in the record that would lead one skilled in the art to combine the relevant teachings, again noting that the mere fact that the prior art may be modified in a particular manner does **not** make the modification obvious unless the prior art suggested the desirability of that modification.

The outstanding Office Action merely argues that since Ishikawa et al. coarsens prism sheets to generate a "uniform pattern of illumination," it would have been obvious to modify Prior Art to similarly coarsen the prism elements therein.

However, as pointed out above, the coarsening of prism elements in Ishikawa et al. was implemented to solve problems totally unrelated to Prior Art, and thus the proffered motivation is not relevant to Prior Art. In addition, the Office Action has failed to point out why one skilled in the art would even look to Ishikawa et al., or what problems may even exist in Prior Art necessitating such modification.

Rather, the Office Action is relying on the present application to provide disclosure of the problem the coarsening of prism elements was implemented to correct.

Thus, it is respectfully submitted that without the present application disclosing the need or desire to modify the prism elements in Prior Art, one skilled in the art would not have had any hint or suggestion to do the same.

Therefore, without reliance on the present application, the Office Action has failed to provide any relevant motivation why one skilled in the art would have been led to modify Prior Art as proffered.

IX. CONCLUSION

In summary, it is submitted that claims 4-7 and 9-11 patentably distinguish over the prior art. Reversal of the Examiner's rejection is respectfully requested.

The Examiner is authorized to charge any Appeal Brief Fee or Petition for Extension of Time fee for underpayment or credit any overpayment to Deposit Account No. 19-3935.

Respectfully submitted,

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Date: 3/31/03

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APPENDIX

4. (FIVE TIMES AMENDED) A surface light source device of side light type, comprising:

a light guide plate having an incidence end surface, an exiting surface and an incline surface gradually decreasing away from the incidence end surface;

a reflecting sheet disposed along the inclined surface of the light guide plate;

a primary light source supplying illumination light to said light guide plate from said incidence end surface, the supplied light being deflected in the light guide plate and emitted from the exiting surface of the light guide plate; and

a light control element disposed along the exiting surface of said light guide plate, the light control element extending in a plane, having a light entrance side with a prismatic surface adjacent to said light guide plate, and having a light emitting side, spaced from the light entrance side, said prismatic surface having repeated projections with slopes inclined with respect to the plane of said light control element, at least part of said slopes defining a light diffusible surface to generate diffused light while the light emanating from the light guide plate is radiating within the light control element from the light entrance side towards the light emitting side, such that a surface of the light emitting side is illuminated in a substantially uniform manner, reducing light effects of the reflecting sheet.

5. (ONCE AMENDED) A surface light source device of side light type according to claim 4, wherein said projections extend in one common direction and are repeatedly arranged in a direction perpendicularly to said one common direction, each of said projections having a substantially triangular cross section.

6. (ONCE AMENDED) A surface light source device of side light type according to claim 4, wherein said light diffusible surface is a rough surface.

7. (THREE TIMES AMENDED) A surface light source device of side light type, comprising:

a light guide plate having an inclined side and an exiting surface to emit light;

a reflecting sheet, disposed along the inclined side of the light guide plate, to reflect light back to the light guide plate; and

a light control element that includes a light entrance side, only portions of which include an inner light diffusible surface that receives the light emitted from the exiting surface of the light guide plate through the light entrance side, said light control element further including a light emitting side spaced from the light entrance side away from the light guide plate, wherein the diffusible surface generates diffused light while the light emitted from the exiting surface of the light guide plate is radiating within the light control element toward the light emitting side such that a surface of the light emitting side is illuminated in a substantially uniform manner, reducing light effects of the reflecting sheet.

9. (NOT AMENDED) A surface light source device of side light type according to claim 5, wherein said light diffusible surface is a rough surface.

10. (NOT AMENDED) A surface light source device of side light type, comprising:

a light guide plate having an incidence end surface, an exiting surface and an incline surface gradually decreasing away from the incidence end surface;

a reflecting sheet disposed along the inclined surface of the light guide plate;

a primary light source supplying illumination light to said light guide plate from said incidence end surface, the supplied light being deflected in the light guide plate and emitted

from the exiting surface of the light guide plate; and

a light control element disposed along the exiting surface of said light guide plate, the light control element extending in a plane, having a light entrance side with a prismatic surface adjacent to said light guide plate, and having a light emitting side, spaced from the light entrance side, said prismatic surface having repeated projections with slopes inclined with respect to the plane of said light control element, with only part of said repeated projections defining a light diffusible surface to generate diffused light while the light emanating from the light guide plate is radiating within the light control element from the light entrance side towards the light emitting side, such that the surface of the light emitting side is illuminated in a substantially uniform manner, reducing light effects of the reflecting sheet.

11. (NOT AMENDED) A surface light source device of side light type according to claim 10, wherein said light diffusible surface is a rough surface.